

M112 - Modeling with Data: Two-Variable Measurement Data

Badge Specific Essential Concepts

- ❖ Scatterplots, including plots over time, can reveal patterns, trends, clusters, and gaps that are useful in analyzing the association between two contextual variables. [NCTM Essential Concept EC.SP.VSD.4]
- ❖ Analyzing the association between two quantitative variables should involve statistical procedures, such as examining (with technology) the sum of squared deviations in fitting a linear model, analyzing residuals for patterns, generating a least-squares regression line and finding a correlation coefficient, and differentiating between correlation and causation. [NCTM Essential Concept EC.SP.VSD.5]
- ❖ Data-analysis techniques can be used to develop models of contextual situations and to generate and evaluate possible solutions to real problems involving those contexts. [NCTM Essential Concept EC.SP.VSD.6]

Administration Notes

This Pre-Post Task is to be used as a tool for students to understand their learning. When administering this task, it is important to highlight a few things for students:

- Students will have the opportunity to complete the task at the beginning and the end of this badge. This is because we want students to be able to see how much they've learned and reflect on that learning in ways that matter to them.
- The work on the task will not be graded. The task is not a quiz or a test - it is designed to support students in understanding how much they have learned from the beginning of the badge to the end.
- Students can have access to any technology that they typically use during classroom instruction to complete this task.
- Students should work individually on the task.

Please share these things with students, reinforcing the idea that this task has been designed to support them in reflecting on the mathematics they have learned. In some tasks, students may create work in different places. It is helpful for them to have their own online folders to store their pre-post tasks as well as any supporting artifacts, such as screenshots from online tools that they use.

Task Analysis

The purpose of the task analysis section is to report on student performance at two points in time -- before and after badge instruction. Complete a table for each student based on an analysis of their responses. You can create summary data for yourself if you choose to understand more globally how students are doing on the concepts measured by the task.

PRE

Were there any interesting or instructionally useful responses or insights from students? Please record those here:

Question/Look For	Blank or similar	Emerging	Approaching	Meeting	Other Notes
(1) Student is able to draw a straight line that passes through the data so that approximately half the points are above and below the line and justify its placement.					
(2) Student is able to provide at least one reasonable choice for the independent and dependent variables.					
(3) Student is able to describe what the three values at $x = 10$ represent using the context they provided in the previous question.					
(4) Student is able to use the graphs and regression output to explain why the age vs. listed price model is a slightly better predictor of listed price.					
(5) Student is able to use the regression equation from the model they chose from the previous question to predict the price of Jane's car.					
(6) Student is able to explain why an extrapolated prediction is not wise in this context.					

POST

Were there any interesting or instructionally useful responses or insights from students? Please record those here:

Question/Look For	Blank or similar	Emerging	Approaching	Meeting	Other Notes
(1) Student is able to draw a straight line that passes through the data so that approximately half the points are above and below the line and justify its placement.					
(2) Student is able to provide at least one reasonable choice for the independent and dependent variables.					
(3) Student is able to describe what the three values at $x = 10$ represent using the context they provided in the previous question.					
(4) Student is able to use the graphs and regression output to explain why the age vs. listed price model is a slightly better predictor of listed price.					
(5) Student is able to use the regression equation from the model they chose from the previous question to predict the price of Jane's car.					
(6) Student is able to explain why an extrapolated prediction is not wise in this context.					